

AMENDMENT TO THE CLAIMS

Please cancel claim 2.

Please amend claims 1, 3-5 to read as follows:

1. (Currently Amended) A nanofiltration system comprising:
a chromatographic unit having an input to receive a mixture of water, acid and sugar, the chromatographic unit being configured to perform a partial separation of acids and sugars and having a first output to supply the separated sugar and a second output coupled to the input feed line to supply a sugar-contaminated acid mixture;
a filtration chamber having an input connection and an output connection;
an input feed line ~~containing a mixture of water, acids and sugars, the input feed line coupled to the chromatographic unit second output and~~ the filtration chamber input connection;
an output line coupled to the filtration chamber output connection;
a nanofiltration membrane positioned within the filtration chamber, the membrane having a first side in fluid communication with the input feed line to receive the sugar-contaminated mixture therefrom and a second side opposite the first side, the second side being in fluid communication with the output line, the membrane allowing passage of the acids in the mixture while substantially blocking passage of the sugars in the mixture; and
an evaporative processor coupled to the output line, the evaporative acid processor configured to receive dilute acid via the output line and to reconcentrate the acid using an evaporation process, wherein removal of sugars from the mixture prevents malfunctioning of the evaporative acid processor.
2. (Canceled)

3. (Currently Amended) The system of claim-2_1, further comprising a feedback line from the nanofiltration unit to the chromatographic unit, the feedback line returning concentrate sugar to the chromatographic unit for further separation.

4. (Currently Amended) The system of claim-2_1, further comprising:
a pre-filtration chamber having an input connection and an output connection;

an input feed line containing a mixture of water, acids and sugars, the input feed line coupled to the pre-filtration chamber input connection;

an output line coupled to the second input of the chromatographic unit;
and

a pre-filter nanofiltration membrane positioned within the pre-filtration chamber, the membrane having a first side in fluid communication with the input feed line to receive the mixture therefrom and a second side opposite the first side, the membrane allowing passage of the acids in the mixture from the membrane first side to the membrane second side while substantially blocking passage of the sugars in the mixture.

5. (Currently Amended) The system of claim-2_1, further comprising a sugar processing system coupled to the first output of the chromatographic unit to receive the separated sugar therefrom, the sugar processing system processing the sugar into a final product.

6. (Original) The system of claim 5 wherein the sugar processing system is a fermentation/distillation system and processes the sugar into ethanol.

7. (Original) The system of claim 5 wherein the sugar processing processes the sugar into a sweetener.

8-17. (Canceled)

18. (Previously Presented) A nanofiltration apparatus for processing acid used in biomass hydrolysis conversion and contaminated with sugar, the apparatus comprising:

a chromatographic unit having an first input to receive water and a second input to receive a mixture of water, acid used in the biomass hydrolysis process and sugar, the chromatographic unit performing a partial separation of acids and sugars and having a first output to supply the separated sugar and a second output to supply a mixture of water, partially purified acid, and sugar contaminant;

a filtration chamber having an input connection and an output connection;

an input feed line coupled to the second output of the chromatographic unit to receive the mixture of water, partially purified acid, and sugar contaminant, the input feed line coupled to the filtration chamber input connection;

an output line coupled to the filtration chamber output connection;

a nanofiltration membrane positioned within the filtration chamber, the membrane having a first side in fluid communication with the input feed line to receive the mixture of water, partially purified acid, and sugar contaminant therefrom and a second side opposite the first side, the second side being in fluid communication with the output line, the membrane allowing passage of the acids in the mixture from the membrane first side to the membrane second side while substantially blocking passage of the sugars in the mixture; and

an evaporative acid processor coupled to the output line, the evaporative acid processor configured to receive dilute acid via the output line and to reconcentrate the acid.

19. (Previously Presented) The apparatus of claim 18 wherein the acid is sulfuric acid.

20. (Previously Presented) The apparatus of claim 18, further comprising a feedback line in fluid communication with the membrane first side and coupled to the chromatographic unit second input.

21. (Previously Presented) The apparatus of claim 18, further comprising a sugar processing system coupled to the first output of the chromatographic unit to receive the separated sugar therefrom, the sugar processing system processing the sugar into a final product.

22. (Previously Presented) The apparatus of claim 21 wherein the sugar processing system is a fermentation/distillation system and processes the sugar into ethanol.

23. (Previously Presented) The apparatus of claim 18, further comprising an acid processing system coupled to the output line of the filtration chamber, the acid processing system comprising a thermal evaporative concentration system.